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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,092	03/30/2004	Kazuyoshi Mizutani	Q80752	3094

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EXAMINER

HAMILTON, CYNTHIA

ART UNIT PAPER NUMBER

1752

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/812,092

Applicant(s)

MIZUTANI ET AL.

Examiner

Cynthia Hamilton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 6, 2006 has been entered.

2. Claims 1 and 4-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al (JP 2002-49156) as evidenced by the machine assisted translation by THOMSON dated 2/21/2005 in view of Aoai et al (5,837,420). With respect to instant claims 1 and 4-15, Toru et al teach all of the instant invention with the exception of that the polymer used needs to have a molecular weight dispersion degree of 1.5 or below. Aoai et al teach for similar positive working photosensitive compositions that the dispersion degree be particularly 1.0 to 1.6 with the smaller the dispersion degree of a resin being the better heat resistance and image forming characteristics such as pattern profile, defocus latitude, etc. the resin can provide. In Aoai et al, see particularly the paragraph bridging col. 38-39. The smallest number polydispersity can be is 1.0 for this is the perfect situation wherein  $M_w=M_n$  and all the polymer chains are essentially the same length. Thus, with respect to instant claims 1 and 4-15, the formation of the polymers of Toru et al with a polydispersity as close to 1.0 as possible would be prima facie obvious in view of Aoai et al teaching the desire to improve heat resistance and image forming characteristics by doing so. In THOMSON, see particularly 3/96, 4/96, 9/96, 10/96, 11/96, 18/96 to 21/96, 39/96 to 44/96 for polymer formulas and examples.

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3. Applicant's arguments filed July 6, 2006 have been fully considered but they are not persuasive. Applicants argue that Aoi et al teach expected improvement in "pattern profile" and shape only. Applicants allege that "pattern profile" as described in Aoi et al and "LER" and "line width stability in vacuo" in the present invention are completely different characteristics from each other. Applicants alleged "pattern profile" evaluates (i.e. assesses) the shape of the cross section of each pattern. Applicants advise that "it is common technical knowledge in the photoresist art that "pattern profile", and one hand, and "LER" and "line width stability in vacuo," on the other, are completely different characteristics, and further it is not unusual that there is a case that even though "pattern profile" is good, "LER" and "line width stability in vacuo" are not good." Applicants submit that "the superior results in terms of LER and line width stability in vacuo obtained with the positive resist composition of the present invention would have been unexpected to a person of ordinary skill in the art, even assuming that that person may have expected some improvement in pattern profile based on the teaching of Aoi et al. Because of this, applicants submit that the present claims are not obvious over the cited references and thus the rejection should be withdrawn. Applicants do point to the examiner's misunderstanding of Flanagan et al with respect to surface roughness and line edge roughness. i.e. LER. For this reason, she removes the optional rejection made in view of Flanagan et al in the Final rejection. However, the rejection stands for all other reasons given. Applicants have argue that the Declaration filed February 3, 2006 demonstrates unexpectedly superior results in terms of LER. However, the examiner sees no showing made with respect to the range of 1.6 made obvious by the prior art with respect to Aoi et al and polydispersity and pattern profile. LER is part of pattern profile as it has to do with the formation of the side of the profile.

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Applicants have not shown anything unexpected with respect to the expected improvement of profile taught by Aoai et al. So, a worker of ordinary skill in the art as of 2004 when this application was filed would have understood LER was part of the issue of pattern profile improvement. Thus, the rejection is not removed in view of the Declaration. The rejection stands as made with the removal of Flanagan et al. That improvement would be expected in profile makes obvious the formation of the instant compositions. Applicants have not addressed the part of the range of Aoai et al not encompassed by applicant's claims. Applicants have not presented evidence showing the relationship or lack of relationship between LER and pattern profile. The examiner notes Suetsugu et al (US2003/0114589 A1) discloses at [0359]:

"The resist pattern profile was evaluated in terms of LER and pattern collapse as follows. The results of evaluation are shown in Table 13."

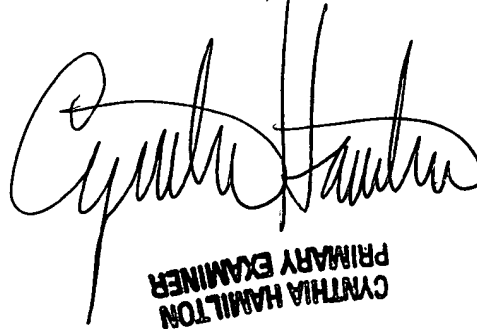
Fujimoro (US 203/0224287 A1) disclose at their abstract and [0006], [0008] and [0167] reference to "pattern profile, particularly, line edge roughness". Thus, there is sufficient closeness in these terms for some workers of ordinary skill in the art to reference pattern profile in terms of line edge roughness. The rejection stands.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cynthia Hamilton whose telephone number is 571-272-1331. The examiner can normally be reached on Monday through Friday 9:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on (571) 272-0729. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



CYNTHIA HAMILTON  
PRIMARY EXAMINER

Cynthia Hamilton  
Primary Examiner  
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August 20, 2006